National Institute of Environmental Health Sciences

Water resources and land use and cover in a humid region: The southeastern United States

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Abstract:

It is widely recognized that forest and water resources are intricately linked. Globally, changes in forest cover to accommodate agriculture and urban development introduce additional challenges for water management. The U.S. Southeast typifies this global trend as predictions of land-use change and population growth suggest increased pressure on water resources in coming years. Close attention has long been paid to interactions between people and water in arid regions; however, based on information from regions such as the Southeast, it is evident that much greater focus is required to sustain a high-quality water supply in humid areas as well. To that end, we review hydrological, physicochemical, biological, and human and environmental health responses to conversion of forests to agriculture and urban land uses in the Southeast. Commonly, forest removal leads to increased stream sediment and nutrients, more variable flow, altered habitat and stream and riparian communities, and increased risk of human health effects. Although indicators such as the percentage of impervious cover signify overall watershed alteration, the threshold to disturbance, or the point at which effects can been observed in stream and riparian parameters, can be quite low and often varies with physiographic conditions. In addition to current land use, historical practices can greatly influence current water quality. General inferences of this study may extend to many humid regions concerning climate, environmental thresholds, and the causes and nature of effects.

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Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Food/Water Quality, Food/Water Security

Food/Water Quality: Biotoxin/Algal Bloom, Chemical, Pathogen

Geographic Feature:

resource focuses on specific type of geography

Freshwater, Urban

Geographic Location:

resource focuses on specific location

United States

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Infectious Disease

Infectious Disease: Foodborne/Waterborne Disease

Mitigation/Adaptation: ☑

mitigation or adaptation strategy is a focus of resource

Adaptation

Resource Type: ☑

format or standard characteristic of resource

Review

Timescale: ☑

time period studied

Time Scale Unspecified

Vulnerability/Impact Assessment: ☑

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content